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     (FILE 'HOME' ENTERED AT 14:47:17 ON 16 JUL 2003)

     INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI,
     BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA,
     CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DDFB,
     DDFU, DGENE, DRUGB, DRUGLAUNCH, DRUGMONOG2, ...' ENTERED AT 14:47:41 ON
     16 JUL 2003

     INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI,
     BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA,
     CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DDFB,
     DDFU, DGENE, DRUGB, DRUGLAUNCH, DRUGMONOG2, ...' ENTERED AT 14:51:10 ON
     16 JUL 2003
                SEA (XYLANASE INHIBIT?) OR (PENTOSANASE INHIBIT?)
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                 3   FILE AGRICOLA
                 1   FILE BIOBUSINESS
                15   FILE BIOSIS
                 8   FILE BIOTECHABS
                 8   FILE BIOTECHDS
                 9   FILE BIOTECHNO
                 8   FILE CABA
                38   FILE CAPLUS
                70   FILE DGENE
                 1   FILE EMBAL
                 8   FILE EMBASE
                11   FILE ESBIOBASE
                13   FILE FROSTI
                 9   FILE FSTA
                22   FILE GENBANK
                 3   FILE LIFESCI
                 6   FILE MEDLINE
                 5   FILE PASCAL
                 4   FILE PROMT
                15   FILE SCISEARCH
                 5   FILE TOXCENTER
                 8   FILE WPIDS
                 8   FILE WPINDEX
L1               QUE (XYLANASE INHIBIT?) OR (PENTOSANASE INHIBIT?)
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     FILE 'DGENE, CAPLUS, BIOSIS, SCISEARCH, FROSTI, ESBIOBASE, BIOTECHNO,
     FSTA' ENTERED AT 14:55:50 ON 16 JUL 2003
L2            180 S L1
L3             92 S L2 AND (PURIF? OR CHARACT? OR ISOLAT?)
L4             81 S L3 AND (WHEAT OR TAXI OR TRITICUM OR BARLEY)
L5             44 DUP REM L4 (37 DUPLICATES REMOVED)
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L5 ANSWER 33 OF 44 DGENE (C) 2003 THOMSON DERWENT
ACCESSION NUMBER: AAY80118 peptide DGENE
TITLE: New **xylanase inhibiting** protein useful as stabilizers for xylan degrading enzymes applied in food, feed and nonfood as paper and pulp technology -
INVENTOR: Hessing M; Happe R P
PATENT ASSIGNEE: (NEDE)NEDERLANDSE ORG TOEGEPAST.
PATENT INFO: EP 979830 A1 20000216 9p
APPLICATION INFO: EP 1998-202704 19980812
PRIORITY INFO: EP 1998-202704 19980812
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-173288 [16]
DESCRIPTION: **Xylanase inhibiting** protein N-terminal sequence SEQ ID NO:1.

AB The present sequence represents the N-terminal sequence of a **xylanase inhibiting** protein. The **xylanase inhibiting** protein is **characterised** by having an apparent molecular weight of 20 and 40 kDa. The **xylanase inhibiting** protein is useful as a stabiliser of xylan degrading enzymes used for the treatment of cereals such as for animal feedstuffs or as a stabiliser of xylan degrading enzymes used in the brewing process, as bread improver, as a natural paper bleaching agent and for the production of xylose. A method from the present invention for the **isolation** of a **xylanase inhibiting** protein can also be used for the detection, quantification and control of **xylanase inhibitors**, used to predict the resulting activity of xylanases applied for industrial processes and used for optimizing the dosages of xylanase applied for industrial processes.

=> d l5 ibib ab 20-29

L5 ANSWER 20 OF 44 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1998:728536 CAPLUS
DOCUMENT NUMBER: 130:1779
TITLE: Inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications
INVENTOR(S): Debyser, Winok; Delcour, Jan
PATENT ASSIGNEE(S): K.U. Leuven Research & Development, Belg.
SOURCE: PCT Int. Appl., 39 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9849278	A1	19981105	WO 1998-EP2590	19980504
W: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, GW, HU, ID, IL, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9877611	A1	19981124	AU 1998-77611	19980504
AU 751631	B2	20020822		
EP 996709	A1	20000503	EP 1998-925518	19980504
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
BR 9809348	A	20000704	BR 1998-9348	19980504
JP 2001523104	T2	20011120	JP 1998-546621	19980504
MX 9910037	A	20000930	MX 1999-10037	19991029

PRIORITY APPLN. INFO.: EP 1997-870060 A 19970430
WO 1998-EP2590 W 19980504

AB The present invention concerns an inhibitor of xylanolytic and/or .beta.-glucanolytic enzymes. Methods are also described for the **isolation** of the inhibitors. Furthermore, methods for increasing or decreasing the activity of the inhibitor are discussed. Uses of the inhibitors are also described, including applications in the areas of food, feed or beverage technologies. These applications include malting and brewing, improving animal feedstuffs, and baked or extruded cereal products.

L5 ANSWER 21 OF 44 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 10
ACCESSION NUMBER: 1998:559597 CAPLUS
DOCUMENT NUMBER: 129:315335
TITLE: Evidence for the presence of a **pentosanase inhibitor** in **wheat** flours
AUTHOR(S): Tousu, ac.; dauthrl, S.
CORPORATE SOURCE: INRA, Unite de Technologie des Cereales et des Agropolymeres, Montpellier, 34060, Fr.
SOURCE: Journal of Cereal Science (1998), 28(1), 63-70
CODEN: JCSCDA; ISSN: 0733-5210
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The solubilization, by a pentosanase prepn. from Aspergillus niger, of arabinoxylans from water-unextractable pentosans (WUP) **isolated** from **wheat** flour was much reduced when carried out in flour aq. exts. as medium, instead of pure buffer. When flour exts. were previously heated at 100.degree.C, the extent of arabinoxylan solubilization was almost restored. The heating at 100.degree.C and centrifugation of the flour exts. removed approx. one-third of the sol. protein but very low amts. of arabinoxylan. Increasing the concn. of exts. decreased the extent of WUP arabinoxylan solubilization. There was slight variability between **wheat** cultivars Apollo, Soissons and Thesee in the extent of the inhibitory effect. Compds. responsible for this effect were mainly present in **wheat** grain endosperm but also in bran. Different microbial xylanases from A. niger (Grindamyl S 100 and EI, an endoxylanase **purified** from this com. prepn.) and Trichoderma strains (C1, a partially **purified** cellulase/hemicellulase complex, and the com. prepns. Veron HE and Multifect XL) were strongly inhibited. Also the arabinofuranosidase activity present in Grindamyl S 100 was inhibited but a lower extent than xylanases. Pronase treatment and protein addn. in the exts. had no effect on the level of inhibition.

L5 ANSWER 19 OF 44 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 9
ACCESSION NUMBER: 1999:521824 CAPLUS
DOCUMENT NUMBER: 132:136634
TITLE: **Triticum** aestivum **Xylanase Inhibitor** (**TAXI**), a New Class of Enzyme Inhibitor Affecting Breadmaking Performance
AUTHOR(S): Debyser, W.; Peumans, W. J.; Van Damme, E. J. M.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: Journal of Cereal Science (1999), 30(1), 39-43
CODEN: JCSCDA; ISSN: 0733-5210
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB To demonstrate that cereals contain protein inhibitor(s) of endoxylanases, the **Triticum** aestivum **xylanase-inhibitor** (**TAXI**) was **isolated** and **characterized**. The authors also investigated whether the endoxylanase inhibitor identified is active during the breadmaking process. The N-terminus of **TAXI** had no sequence similarity with any other known protein. **TAXI** was eluted from the gel filtration column with an apparent Mr of .apprx.40 kDa and migrated upon isoelec. focusing as a single band with a pI of .apprx.8.8. **Wheat** loaves were prepd. without or with A. niger endoxylanase by using a straight dough procedure. The max. increase in bread vol. produced by the A. niger endoxylanase was .apprx.20%. When the same level of endoxylanase activity was added together with **purified TAXI**, no increase in bread vol. occurred. Upon addn. of **TAXI** alone, the bread vol. was reduced by 8%. Thus, endogeneous **wheat** flour endoxylanases have a pos. effect on bread vol. and are inhibited by **TAXI**. Accordingly, breeding **TAXI**-deficient **wheat** varieties or varieties with low levels of expression of this inhibitor may be important for improving breadmaking performance.
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 13 OF 44 CAPLUS COPYRIGHT 2003 ACS , DUPLICATE 7
ACCESSION NUMBER: 2001:542936 CAPLUS
DOCUMENT NUMBER: 135:241213
TITLE: **Purification** and partial **characterization** of an endoxylanase inhibitor from **barley**
AUTHOR(S): Goesaert, H.; Debyser, W.; Gebruers, K.; Proost, P.; Van Damme, J.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: Cereal Chemistry (2001), 78(4), 453-457
CODEN: CECHAF; ISSN: 0009-0352
PUBLISHER: American Association of Cereal Chemists
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Hordeum vulgare L. **xylanase inhibitor** (HVXI), an endoxylanase inhibitor with a protein structure, was **purified** to homogeneity from **barley** (Hordeum vulgare L.). HVXI is a nonglycosylated monomeric protein, with a mol. wt. of .apprxeq.40,000 and a pI .gtoreq. 9.3. Although it inhibits different endoxylanases to a varying degree, the activities of an .alpha.-L-arabinofuranosidase and a .beta.-D-xylosidase were not inhibited. Apparently, HVXI occurs in two mol. forms. These **characteristics** and the N-terminal sequences of the composing polypeptides show that HVXI is homologous with **Triticum** aestivum L. **xylanase inhibitor** I, an endoxylanase inhibitor from **wheat** flour.
REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 14 OF 44 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2000:457204 CAPLUS
DOCUMENT NUMBER: 133:88573
TITLE: Xylanases and **wheat** flour **xylanase inhibitors** and their effects on dough stickiness
INVENTOR(S): Sibbesen, Ole; Sorensen, Jens Frisbaek
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 112 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000039289	A2	20000706	WO 1999-IB2071	19991217
WO 2000039289	A3	20010412		
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2356255	AA	20000706	CA 1999-2356255	19991217
BR 9916507	A	20011002	BR 1999-16507	19991217
EP 1141254	A1	20011010	EP 1999-959641	19991217
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
GB 2362386	A1	20011121	GB 2001-16552	19991217

JP 2002533121	T2	20021008	JP 2000-591181	19991217
FR 2788781	A1	20000728	FR 1999-16362	19991223

PRIORITY APPLN. INFO.:

GB 1998-28599	A	19981223
GB 1999-7805	A	19990406
GB 1999-8645	A	19990415
WO 1999-IB2071	W	19991217

AB The present invention discloses an endo-.beta.-1,4-**xylanase inhibitor** as well as xylanases and their interactions and role in the stickiness of dough. The endogenous endo-.beta.-1,4-**xylanase inhibitor** from **wheat** flour was **isolated** and **characterized**. The inhibitor privides means for selecting xylanases which are not detrimentally affected by endo-.beta.-1,4-**xylanase inhibitors**. Bacterial xylanases and mutants are disclosed that provide dough exhibiting favorable vol. and acceptable stickiness when compared to doughs comprising fungal xylanases. In addn., the presence of glucanase enzymes in certain amts. are shown to have a detrimental effect on the xylanases.

L5 ANSWER 15 OF 44 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:287270 CAPLUS
DOCUMENT NUMBER: 135:151771
TITLE: **Xylanase inhibitors** from cereals. Implications for baking, brewing, and plant technology
AUTHOR(S): McLauchlan, W. R.; Flatman, R. H.; Sancho, A. I.; Kakuta, J.; Faulds, C. B.; Elliot, G. O.; Kroon, P. A.; Furniss, C. S. M.; Juge, N.; Ravestein, P.; Williamson, G.
CORPORATE SOURCE: Division of Diet, Health and Consumer Sciences, Institute of Food Research, Norwich Research Park, Norwich, NR4 7UA, UK
SOURCE: VTT Symposium (2000), 207, 55-61
CODEN: VTTSE9; ISSN: 0357-9387
PUBLISHER: Valtion Teknillinen Tutkimuskeskus
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review with 19 refs,. including the authors' own work, is given on **purifn**. and **characterization** of **xylanase inhibitors** from **wheat** flour and other cereals. The implications for food and agriculture industry are discussed of the presence of these inhibitors in cereal flour, with particular ref. to baking, brewing, and plant biotechnol.
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 16 OF 44 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:287269 CAPLUS
DOCUMENT NUMBER: 135:317554
TITLE: **TAXI**, a new class of enzyme inhibitors
AUTHOR(S): Debyser, W.; Peumans, W. J.; Goesaert, H.; Gebruers, K.; Van Damme, E. J. M.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: VTT Symposium (2000), 207, 47-54
CODEN: VTTSE9; ISSN: 0357-9387
PUBLISHER: Valtion Teknillinen Tutkimuskeskus
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB To demonstrate that cereals contain besides .alpha.-amylase and protease inhibiting proteins of endoxylanases, the **Triticum** aestivum **xylanase-inhibitor** (**TAXI**) was **isolated** and **characterized**. The discovery of **TAXI** opens an entirely new area in research since it demonstrates the existence of a group of proteins which are equally relevant for the improvement of plant disease resistance, as well as for nutraceutical or pharmaceutical

applications. All this and more was reviewed with 27 refs.
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 17 OF 44 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:287268 CAPLUS
DOCUMENT NUMBER: 135:317553
TITLE: Endogenous inhibitors of the endoproteinases and other enzymes of **barley**
AUTHOR(S): Jones, Berne L.; Marinac, Laurie A.
CORPORATE SOURCE: Cereal Crops Research Unit, USDA/Agricultural Research Service, Madison, WI, 53705, USA
SOURCE: VTT Symposium (2000), 207, 39-46
CODEN: VTTSE9; ISSN: 0357-9387
PUBLISHER: Valtion Teknillinen Tutkimuskeskus
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review with 18 refs. Topics discussed include the inhibitors of carbohydrate-degrading enzymes such as the .alpha.-amylase inhibitor, the limit dextrinase inhibitor, and the **xylanase inhibitor** ; the identification of proteinase inhibitors; the demonstration of inhibitors in **barley** and malt; the sepn. of **barley** and malt inhibitors by ion exchange chromatog.; the **purifn**. and identification of two endoproteinase inhibitors; the observation that the inhibitors affect mainly the malt cysteine proteinases; the suggestion that inhibitors are complexed with proteinases in exts.; attempts to dissoc. the enzyme-inhibitor complex; and the finding that adding endogenous endoproteinase inhibitors to mashes lowers wort sol. protein levels.
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 18 OF 44 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 8
ACCESSION NUMBER: 1999:205885 CAPLUS
DOCUMENT NUMBER: 131:29048
TITLE: A novel class of protein from **wheat** which inhibits xylanases
AUTHOR(S): McLauchlan, W. Russell; Garcia-Conesa, Maria T.; Williamson, Gary; Roza, Martinus; Ravestein, Peter; Maat, Jan
CORPORATE SOURCE: Institute of Food Research, Norwich, NR4 7UA, UK
SOURCE: Biochemical Journal (1999), 338(2), 441-446
CODEN: BIJOAK; ISSN: 0264-6021
PUBLISHER: Portland Press Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We have **purified** a novel class of protein that can inhibit the activity of endo-.beta.-1,4-xylanases. The inhibitor from **wheat** (**Triticum** aestivum, var. Soisson) is a glycosylated, monomeric, basic protein with a pI of 8.7-8.9, a mol. mass of 29 kDa and a unique N-terminal sequence of AGGKTGQVTVFWGRN. We have shown that the protein can inhibit the activity of two family-11 endo-.beta.-1,4-xylanases, a recombinant enzyme from Aspergillus niger and an enzyme from Trichoderma viride. The inhibitory activity is heat and protease sensitive. The kinetics of the inhibition have been **characterized** with the A. niger enzyme using sol. **wheat** arabinoxylan as a substrate. The Km for sol. arabinoxylan in the absence of inhibitor is 20.+-.2 mg/mL with a kcat of 103.+-.6 s-1. The kinetics of the inhibition of this reaction are competitive, with a Ki value of 0.35 .mu.M, showing that the inhibitor binds at or close to the active site of free xylanase. This report describes the first **isolation** of a **xylanase inhibitor** from any organism.
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 19 OF 44 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 9
ACCESSION NUMBER: 1999:521824 CAPLUS
DOCUMENT NUMBER: 132:136634
TITLE: **Triticum** aestivum **Xylanase Inhibitor** (**TAXI**), a New Class of Enzyme Inhibitor Affecting Breadmaking Performance
AUTHOR(S): Debyser, W.; Peumans, W. J.; Van Damme, E. J. M.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: Journal of Cereal Science (1999), 30(1), 39-43
CODEN: JCSCDA; ISSN: 0733-5210
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB To demonstrate that cereals contain protein inhibitor(s) of endoxylanases, the **Triticum** aestivum **xylanase-inhibitor** (**TAXI**) was **isolated** and **characterized**. The authors also investigated whether the endoxylanase inhibitor identified is active during the breadmaking process. The N-terminus of **TAXI** had no sequence similarity with any other known protein. **TAXI** was eluted from the gel filtration column with an apparent Mr of .apprx.40 kDa and migrated upon isoelec. focusing as a single band with a pI of .apprx.8.8. **Wheat** loaves were prepd. without or with A. niger endoxylanase by using a straight dough procedure. The max. increase in bread vol. produced by the A. niger endoxylanase was .apprx.20%. When the same level of endoxylanase activity was added together with **purified TAXI**, no increase in bread vol. occurred. Upon addn. of **TAXI** alone, the bread vol. was reduced by 8%. Thus, endogeneous **wheat** flour endoxylanases have a pos. effect on bread vol. and are inhibited by **TAXI**. Accordingly, breeding **TAXI**-deficient **wheat** varieties or varieties with low levels of expression of this inhibitor may be important for improving breadmaking performance. (c) 1999 Academic Press.
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d l5 ibib ab 1-9

L5 ANSWER 1 OF 44 FSTA COPYRIGHT 2003 IFIS
ACCESSION NUMBER: 2003:M0785 FSTA
TITLE: Healthier cereal products in the pipeline.
CORPORATE SOURCE: Flair-Flow Europe; Correspondence address, J. Delcour, Lab. of Food Chem., Katholieke Univ. Leuven, 3001 Leuven, Heverlee, Belgium. Tel. +32 16 321634. Fax +32 16 321997
SOURCE: Flair-Flow Reports, (2003) FFE 583/03/SME67, 1p.
DOCUMENT TYPE: Report
LANGUAGE: English
AB The health profile of many cereal products may be further enhanced by adding .beta.-glucans to increase the content of soluble arabinoxylans. These soluble fibres lower both blood cholesterol (a risk factor for coronary disease), and the postprandial glycaemic response (blood sugar level) which may help control diabetes. Progress is described in the ongoing EU project (QLK1-2000-00324 (SOLFIBREAD)) whose aim is to study new hull-less and waxy **barley** varieties with a high .beta.-glucan content, and milling of these grains to optimize .beta.-glucan rich fractions for fortification of **wheat** flour. The project is also considering other health-related or functional components present in **barley** fractions (arabinoxylan, tocopherols, tocotrienols, flavonoids, .beta.-glucanases, endoxylanases, endoxylanase inhibitors). During the 1st yr of the project **barley** fractions were optimized and the baking **characteristics** of mixed **wheat** flour and **barley** fractions were evaluated. Results showed that flour mixes had a lower baking strength than a basic **wheat** flour. The lower baking strength of the mixes was expected to be influenced by the presence of xylan degrading enzymes and their inhibitors. Consequently, the 2nd yr of the project studied xylanases and **xylanase inhibitors**, and glucanase and glucanase inhibitors. Breadmaking experiments showed that xylanases were able to reduce the negative effects of adding hull-less **barley** flour to **wheat** flour.

L5 ANSWER 2 OF 44 SCISEARCH COPYRIGHT 2003 THOMSON ISIDUPLICATE 1
ACCESSION NUMBER: 2003:333204 SCISEARCH
THE GENUINE ARTICLE: 665XQ
TITLE: Molecular identification of **wheat** endoxylanase inhibitor **TAXI**-I-1, member of a new class of plant proteins
AUTHOR: Fierens K (Reprint); Brijs K; Courtin C M; Gebruers K; Goesaert H; Raedschelders G; Robben J; Van Campenhout S; Volckaert G; Delcour J A
CORPORATE SOURCE: Katholieke Univ Leuven, Food Chem Lab, Kasteelpk Arenberg 20, B-3001 Louvain, Belgium (Reprint); Katholieke Univ Leuven, Food Chem Lab, B-3001 Louvain, Belgium; Katholieke Univ Leuven, Lab Gene Technol, B-3001 Heverlee, Belgium
COUNTRY OF AUTHOR: Belgium
SOURCE: FEBS LETTERS, (10 APR 2003) Vol. 540, No. 1-3, pp. 259-263

Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 0014-5793.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 31
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
AB **Triticum** aestivum endoxylanase inhibitors (**TAXIS**) are **wheat** proteins that inhibit family 11 endoxylanases commonly used in different (bio)technological processes. Here, we report on the identification of the **TAXI**-I gene which encodes a mature protein

of 381 amino acids with a calculated molecular mass of 38.8 kDa. When expressed in Escherichia coli, the recombinant protein had the specificity and inhibitory activity of natural **TAXI**-I, providing conclusive evidence that the **isolated** gene encodes an endoxylanase inhibitor. Bioinformatical analysis indicated that no conserved domains nor motifs common to other known proteins are present. Sequence analysis revealed similarity with a glycoprotein of carrot and with gene families in Arabidopsis thaliana and rice, all with unknown functions. Our data indicate that **TAXI**-I belongs to a newly identified class of plant proteins for which a molecular function as glycoside hydrolase inhibitor can now be suggested. (C) 2003 Federation of European Biochemical Societies. Published by Elsevier Science B.V. All rights reserved.

L5 ANSWER 3 OF 44 SCISEARCH COPYRIGHT 2003 THOMSON ISIDUPLICATE 2
ACCESSION NUMBER: 2003:178927 SCISEARCH
THE GENUINE ARTICLE: 644XD
TITLE: A **wheat xylanase inhibitor** protein (XIP-I) accumulates in the grain and has homologues in other cereals
AUTHOR: Elliott G O; McLauchlan W R; Williamson G; Kroon P A (Reprint)
CORPORATE SOURCE: AFRC, Inst Food Res, Diet Hlth & Consumer Sci Div, Colney Lane, Norwich NR4 7UA, Norfolk, England (Reprint); AFRC, Inst Food Res, Diet Hlth & Consumer Sci Div, Norwich NR4 7UA, Norfolk, England
COUNTRY OF AUTHOR: England
SOURCE: JOURNAL OF CEREAL SCIENCE, (MAR 2003) Vol. 37, No. 2, pp. 187-194.
Publisher: ACADEMIC PRESS LTD ELSEVIER SCIENCE LTD, 24-28 OVAL RD, LONDON NW1 7DX, ENGLAND.
ISSN: 0733-5210.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 22
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We have measured **xylanase inhibitor** activity against an Aspergillus niger xylanase in different parts of the **wheat** plant at different stages of development and used immunodetection to determine the spatial and temporal distribution of **xylanase inhibitor** protein I (XIP-I) in **Triticum** aestivum var. Soisson. Although **xylanase inhibitor** activity was detected in all parts of the **wheat** plant throughout development, XIP-I was located predominantly in the grain tissue, where it appears at a late stage in grain development and persists after germination, indicating that the different **xylanase inhibitor** proteins are under different regulatory controls. (1,4)-beta-Xylanase activity was detected in **wheat** grains during development and post-germination. Pure XIP-I and a crude sample containing **TAXI** inhibitors but not XIP-I did not have the ability to inhibit this enclogenous (1,4)-beta-xylanase activity. Protein extracts from the seeds of various monocots were also tested for the presence of XIP-I, where it was found to be present in the grains of several **wheat** varieties, rye and **barley**, but was not detected in rice, sorghum or maize. (C) 2003 Elsevier Science Ltd. All rights reserved.

L5 ANSWER 4 OF 44 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 3
ACCESSION NUMBER: 2002:862725 CAPLUS
DOCUMENT NUMBER: 138:119267
TITLE: Specific **Characterization** of Substrate and Inhibitor Binding Sites of a Glycosyl Hydrolase Family 11 Xylanase from Aspergillus niger
AUTHOR(S): Tahir, Tariq A.; Berrin, Jean-Guy; Flatman, Ruth; Roussel, Alain; Roepstorff, Peter; Williamson, Gary;

Juge, Nathalie
CORPORATE SOURCE: Institute of Food Research (IFR), Norwich Research Park, Norwich, NR4 7UA, UK
SOURCE: Journal of Biological Chemistry (2002), 277(46), 44035-44043
CODEN: JBCHA3; ISSN: 0021-9258
PUBLISHER: American Society for Biochemistry and Molecular Biology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The importance of arom. and charged residues at the surface of the active site of a family 11 xylanase from Aspergillus niger was evaluated using site-directed mutagenesis. Ten mutant proteins were heterologously produced in Pichia pastoris, and their biochem. properties and kinetic parameters were detd. The specific activity of the Y6A, Y10A, Y89A, Y164A, and W172A mutant enzymes was drastically reduced. The low specific activities of Y6A and Y89A were entirely accounted for by a change in kcat and Km, resp., whereas the lower values of Y10A, Y164A, and W172A were due to a combination of increased Km and decreased kcat. Tyr6, Tyr10, Tyr89, Tyr164, and Trp172 are proposed as substrate-binding residues, a finding consistent with structural sequence alignments of family 11 xylanases and with the three-dimensional structure of the A. niger xylanase in complex with the modeled xylobiose. All other variants, D113A, D113N, N117A, E118A, and E118Q, retained full wild-type activity. Only N117A lost its sensitivity to **xylanase inhibitor** protein I (XIP-I), a protein inhibitor **isolated** from **wheat**, and this mutation did not affect the fold of the xylanase as revealed by CD. The N117A variant showed kinetics, pH stability, hydrolysis products pattern, substrate specificity, and structural properties identical to that of the wild-type xylanase. The loss of inhibition, as measured in activity assays, was due to abolition of the interaction between XIP-I and the mutant enzyme, as demonstrated by surface plasmon resonance and electrophoretic titrn. A close inspection of the three-dimensional structure of A. niger xylanase suggests that the binding site of XIP-I is located at the conserved "thumb" hairpin loop of family 11 xylanases.

REFERENCE COUNT: 63 THERE ARE 63 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 5 OF 44 SCISEARCH COPYRIGHT 2003 THOMSON ISI
ACCESSION NUMBER: 2002:875605 SCISEARCH
THE GENUINE ARTICLE: 605GE
TITLE: Enzymatic solubilization of arabinoxylans from **isolated** rye pentosans and rye flour by different endo-xylanases and other hydrolyzing enzymes. Effect of a fungal laccase on the flour extracts oxidative gelation
AUTHOR: Figueroa-Espinoza M C (Reprint); Poulsen C; Soe J B; Zargahi M R; Rouau X
CORPORATE SOURCE: ENSIA SIARC, 1101, Av Agropolis, BP 5098, F-34033 Montpellier 01, France (Reprint); INRA ENSAM, Unit Technol Cereales & Agropolymeres, F-34060 Montpellier 01, France; Danisco Cultor, DK-8220 Brabrand, Denmark
COUNTRY OF AUTHOR: France; Denmark
SOURCE: JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY, (23 OCT 2002) Vol. 50, No. 22, pp. 6473-6484.
Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036 USA.
ISSN: 0021-8561.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 61

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Water-extractable (WEP) and water-unextractable (WUP) pentosans were **isolated** from a rye flour. The effect of a commercial enzyme preparation, Grindamyl S 100 (GS100), containing pentosanase activities,

was investigated on WEP, WUP, a mix of WEP and WUP, and the rye flour, with the aim to monitor the solubilization and depolymerization of high molecular weight arabinoxylans and the effect on the viscosity of the reaction medium. The effects of other hydrolyzing enzymes were also tested. Three xylanases were used: xylanase 1 (Xyl-1) from Aspergillus niger, the main activity present in GS100; xylanase 2 (Xyl-2) from Talaromyces emersonii, and xylanase 3 (Xyl-3) from Bacillus subtillis. Xyl-3 was used in combination with Xyl-1, (1,4)-beta-D-arabinoxylan arabinofuranohydrolase, endo-beta-D-glucanase, or ferulate esterase from A. niger, but no synergism was observed. GS100 and xylanases increased the arabinoxylan solubilization, Xyl-3 and Xyl-1 being those that presented the best yields of extraction without extensive depolymerization of water-extractable arabinoxylans. Both xylanases were affected by an inhibitor in rye flour. Flour treated with hot ethanol was used to study the oxidative gelation of flour extracts treated with xylanases, in the presence of laccase from Pycnoporus cinnabarinus. Two doses of xylanases were tested (0.5 and 2.5 units). Only the flour extracts treated with 0.5 unit of Xyl-1 thickened.

L5 ANSWER 6 OF 44 BIOTECHNO COPYRIGHT 2003 Elsevier Science B.V.
ACCESSION NUMBER: 2002:34864460 BIOTECHNO
TITLE: Interactions defining the specificity between fungal xylanases and the **xylanase-inhibiting** protein XIP-I from **wheat**
AUTHOR: Flatman R.; McLauchlan W.R.; Juge N.; Furniss C.; Berrin J.-G.; Hughes R.K.; Manzanares P.; Ladbury J.E.; O'Brien R.; Williamson G.
CORPORATE SOURCE: G. Williamson, Nestle Research Center, P.O Box 44, CH-1000 Lausanne 26, Switzerland.
E-mail: gary.williamson@rdls.nestle.com
SOURCE: Biochemical Journal, (01 AUG 2002), 365/3 (773-781), 41 reference(s)
CODEN: BIJOAK ISSN: 0264-6021
DOCUMENT TYPE: Journal; Article
COUNTRY: United Kingdom
LANGUAGE: English
SUMMARY LANGUAGE: English
AB We previously reported on the **xylanase-inhibiting** protein I (XIP-I) from **wheat** [McLauchlan, Garcia-Conesa, Williamson, Roza, Ravestein and Maat (1999), Biochem, J. 338, 441-446]. In the present study, we show that XIP-I inhibits family-10 and -11 fungal xylanases. Ihe K.sub.1 values for fungal xylanases ranged from 3.4 to 610 nM, but bacterial family-10 and -11 xylanases were not inhibited. Unlike many glycosidase inhibitors, XIP-I was not a slow-binding inhibitor of the Aspergillus niger xylanase. Isothermal titration calorimetry of the XIP-I-A. niger xylanase complex showed the formation of a stoichiometric (1:1) complex with a heat capacity change of -1.38 kJ.midldot.mol.sup.-.sup.1.midldot.K.sup.-.sup.1, leading to a predicted buried surface area of approx. 2200 .+-. 500 .ANG..sup.2 at the complex interface. For this complex with A. niger xylanase (K.sub.i = 320 nM at pH 5.5), titration curves indicated that an observable interaction occurred at pH 4-7, and this was consistent with the pH profile of inhibition of activity. In contrast, the stronger complex between A. nidulans xylanase and XIP-I (K.sub.i = 9 nM) led to an observable interaction across the entire pH range tested (3-9). Using surface plasmon resonance, we show that the differences in the binding affinity of XIP-I for A. niger and A. nidulans xylanase are due to a 200-fold lower dissociation rate k.sub.o.sub.f.sub.f for the latter, with only a small difference in association rate k.sub.o.sub.n.

L5 ANSWER 7 OF 44 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 4
ACCESSION NUMBER: 2002:796360 CAPLUS
DOCUMENT NUMBER: 138:119205
TITLE: Affinity Chromatography with Immobilised Endoxylanases

Separates **TAXI**- and XIP-type Endoxylanase Inhibitors from **Wheat** (**Triticum** aestivum L.)

AUTHOR(S): Gebruers, K.; Brijs, K.; Courtin, C. M.; Goesaert, H.; Proost, P.; Van Damme, J.; Delcour, J. A.

CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Louvain, B-3001, Belg.

SOURCE: Journal of Cereal Science (2002), 36(3), 367-375
CODEN: JCSCDA; ISSN: 0733-5210

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB An affinity-based **purifn**. procedure allowed the resoln. of two distinct groups of endoxylanase inhibitors with different mol. structures and endoxylanase specificities from **wheat** wholemeal. The first group comprises the so-called **Triticum** aestivum L. endoxylanase inhibitor (**TAXI**)-type proteins which are of approx. Mr 40 000 and occur in two different mol. forms. These inhibitors were removed from a concd. cation exchange chromatog. fraction from **wheat** wholemeal on a Bacillus subtilis endoxylanase affinity column. The second group of structurally different endoxylanase inhibitors, the so-called **xylanase inhibiting** protein (XIP)-type, of approx. Mr 29 000-32 000, with pI values varying between 8.8 and 9.2, was **purified** from the unbound fraction from the B. subtilis endoxylanase affinity column by chromatog. on an Aspergillus niger endoxylanase affinity column followed by gel permeation chromatog. The XIP-type inhibitors are not active against the B. subtilis endoxylanase and were consequently not retained on the B. subtilis endoxylanase column. Further anal. of the XIP-type proteins by high-resoln. cation exchange chromatog., SDS-PAGE and iso-electrofocusing, revealed several forms. They had similar endoxylanase specificities and N-terminal amino acid sequences.

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 8 OF 44 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 5

ACCESSION NUMBER: 2002:708506 CAPLUS

DOCUMENT NUMBER: 138:200799

TITLE: A Family of '**TAXI**'-like Endoxylanase Inhibitors in Rye

AUTHOR(S): Goesaert, H.; Gebruers, K.; Courtin, C. M.; Proost, P.; Van Damme, J.; Delcour, J. A.

CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Louvain, B-3001, Belg.

SOURCE: Journal of Cereal Science (2002), 36(2), 177-185
CODEN: JCSCDA; ISSN: 0733-5210

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Four Secale cereale L. **xylanase inhibitors** (SCXI) from rye were **purified** to homogeneity. The inhibitor proteins all occur in two mol. forms, i.e. a c. 40 kDa monomeric protein and, presumably following proteolytic modification, a heterodimer consisting of two disulfide linked subunits of c. 30 and c. 10 kDa. These basic proteins all have isoelec. points of at least 9.0 and a highly homologous N-terminal amino acid sequence. The **isolated** proteins strongly inhibited the activity of Aspergillus niger, Bacillus subtilis and Trichoderma viride family 11 endoxylanases, but showed no activity towards an Aspergillus aculeatus family 10 endoxylanase. These **characteristics** demonstrate that rye contains a family of isoinhibitors with similar structures and specificities, that are homologous with **Triticum** aestivum L. **xylanase inhibitor** I (**TAXI** I) from **wheat** and Hordeum vulgare L. **xylanase inhibitor** (HVXI) from

barley.

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 9 OF 44 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:171813 CAPLUS

DOCUMENT NUMBER: 139:21074

TITLE: Influence of phenolics **isolated** from cellulosic waste materials on the production and activity of cell wall degrading enzymes

AUTHOR(S): El-Katatny, M. S.; Attia, A. M.; Fadl-Allah, E. M.; Emam, Abeer S.

CORPORATE SOURCE: Department of Botany, El-Minia University, El-Minia, Egypt

SOURCE: Bulletin of the Faculty of Science, Assiut University, D: Botany (2002), 31(1), 167-182
CODEN: BFSBE9

PUBLISHER: Assiut University

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The addn. of 300 .mu.g of insol. phenolics extd. from the cell wall of sugarcane bagasse to the reaction mixt. resulted in 87.5, 63.4 and 77.6% inhibition to the activities of carboxymethylcellulase (CMC-as), polygalacturonase (PG) and xylanase, resp. Also the addn. of 80 .mu.g sol. phenolics extd. from corn cob to the reaction mixt. resulted in 85.4, 45.2 and 89.4% inhibition to the activities of CMC-ase, PG and xylanase, resp. Results revealed that, although the removal of sol. or insol. phenolics from cellulosic wastes inhibited the prodn. of polysaccharide degrading enzymes, it greatly increased the rate of saccharification. There were 13.25 and 18.5-fold increase in the degree of saccharification of **wheat** straw after the removal of insol. and sol. phenolics, resp. Maximum inhibition of 92.37% in the rate of saccharification of corn cob was recorded after the addn. of 300 .mu.g of insol. phenolics (extd. from bagasse) to the reaction mixt. whereas 91.2% inhibition was obtained upon the addn. of 80 .mu.g of sol. phenolics (extd. from corn cob). It was concluded that the rate of saccharification could be increased by the removal of phenolics compds. (sol. or insol.).

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT